

Amendments to the Claims: Please amend the claims as shown. Applicants reserve the right to pursue any canceled claims at a later date.

1.-17. (canceled)

18. (currently amended) A network having redundancy properties, comprising:

a redundancy manager;

at least one branching unit for connecting a user device to the network; and

a line having two line ends, the two line ends connected to the redundancy manager, the

redundancy manager ~~is configured~~ to:

disconnect the two line ends from each other in an error-free state of the line;

connect the two line ends in an error state of the line; and

feed a supply voltage into one of the two line ends for supplying a user device connected to the network via the branching unit, wherein

the branching unit is arranged in the network line such that a first cable having a first cable end of the network line is connected to a first network connection of the branching unit and a second cable having a second cable end of the network line is connected to a second network connection of the branching unit,

the branching unit ~~is configured~~ to:

check a state of the first cable if the supply voltage is received at the second network connection and to check a state of the second cable if the supply voltage is received at the first network connection; and

forward the supply voltage to the ~~first respectively second~~ checked cable only if the ~~first respectively second~~ checked cable has an error-free state, and

the redundancy manager ~~is configured~~ to:

feed a further supply voltage to the first line end if the supply voltage is fed to the second line end and is not detected at the first line end after lapse of a predetermined period of time by the redundancy manager; and

feed the further supply voltage to the second line end if the supply voltage is fed to the first line end and is not detected at the second line end after lapse of the predetermined period of time by the redundancy manager.

19. (previously presented) The network in accordance with claim 18, wherein the network is a PROFIBUS PA network.

20. (currently amended) The network in accordance with claim 18, wherein the redundancy manager and the branching unit each include a termination element ~~configured to be connected to the first or second line end if the redundancy manager or the branching unit are arranged at the first respectively~~ respective first or second line end.

21. (currently amended) The network in accordance with claim 18, wherein the branching unit comprises two switches and a control unit, the two switches ~~configured to be actuated by the control unit such that a user device connected to the branching unit can be selectively connected to the first or to the second network connection or to both the first and second network connections for maintaining power supply to the user device and for maintaining data transmission from the user device to the network.~~

22. (currently amended) The network in accordance with claim 21, wherein the branching unit comprises a resistor network including the two switches, and the switches are ~~configured to be actuated by the control unit such that a current or a voltage related to the first or second cable connected to the first respectively second network connection can be checked by the control unit.~~

23. (currently amended) The network in accordance with claim 18, wherein the branching unit comprises an energy accumulator ~~configured to be charged by the supply voltage at least in the error-free state, and the branching unit is configured to measure~~ measures a voltage present at the user device connected to the network via the branching unit and to connect the energy accumulator to the user device if the measured voltage corresponds to a voltage deficit.

24. (previously presented) The network in accordance with claim 18, comprising a plurality of branching units, wherein the redundancy manager includes a recording unit for recording the timely behaviour of a voltage or a current related to the supply voltage at the first or second line end during forwarding of the supply voltage by any of the branching units and for determining the number of branching units fed by the supply voltage up to a physical error location.

25. (previously presented) The network in accordance with claim 18, wherein the redundancy manager includes a further recording unit for recording changes of a voltage or a current related to the supply voltage at the first or second line end and for determining a state transition of the network.

26. (canceled)

27. (currently amended) The Branching unit in accordance with claim ~~26~~ 36, further comprising two switches and a control unit, the two switches ~~configured to be~~ actuated by the control unit such that a user device connected to the branching unit can be selectively connected to the first or to the second network connection or to both the first and second network connections for maintaining power supply to the user device and for maintaining data transmission from the user device to the ~~network~~ communication line.

28. (currently amended) The branching unit in accordance with claim 27, further comprising a resistor network including the two switches, wherein the switches are ~~configured to be~~ actuated by the control unit such that a current or a voltage related to the first or second cable connected to the ~~first respectively~~ respective first or second network connection can be checked by the control unit.

29. (currently amended) The branching unit in accordance with claim-26 27, further comprising an energy accumulator-~~configured to be charged by the supply voltage~~ a power voltage on the communication line at least in-the an error-free state of the communication line, wherein the branching unit-is-~~configured to measure~~ measures a voltage present at the user device connected to-the-network via the branching-unit unit, and-to-connect connects the energy accumulator to the user device if the measured voltage corresponds to a voltage deficit.

30. (currently amended) The branching unit in accordance with claim-26 36, wherein the first and second network connections are-~~configured to be~~ selectively fixed in a predetermined electrical state for performing maintenance or repair work.

31. (currently amended) A redundancy manager for a network having redundancy properties, the network having a line including first and second line ends, the first and second line ends connected to the redundancy manager, the redundancy manager-~~configured to~~:  
disconnect the first and second line ends from each other in an error-free state of the line;  
connect the first and second line ends in an error state of the line;  
feed a supply voltage into the first or second line end for supplying a user device connected to the network via a branching unit;

feed a further supply voltage to the first line end if the supply voltage is fed to the second line end and is not detected at the first line end after lapse of a predetermined period of time by the redundancy manager; and

feed the further supply voltage to the second line end if the supply voltage is fed to the first line end and is not detected at the second line end after lapse of the predetermined period of time by the redundancy manager;

wherein the network further comprises a plurality of branching units and a recording unit for recording the timely behavior of a voltage or a current related to the supply voltage at the first or second line end during forwarding of the supply voltage by any of the branching units and for determining the number of branching units fed by the supply voltage up to a physical error location..

32. (canceled)

33. (previously presented) The redundancy manager in accordance with claim 31, further comprising a communication interface for connecting the redundancy manager to a higher-ranking network and for exchanging data with the higher-ranking network.

34. (currently amended) The redundancy manager in accordance with claim 33, further comprising at least two segment couplers for connecting the redundancy manager to at least two communication channels of the higher-ranking network, the higher-ranking network embodied as a redundant network, wherein the redundancy manager is ~~configured~~ to:

- monitor a functionality of the at least two segment couplers; and
- select one of the segment couplers for connecting the redundancy manager to the network having redundancy properties.

35. (currently amended) A method of operating a network having redundancy properties, the network comprising a line having first and second line ends connected to a redundancy manager, the method comprising:

- disconnecting the first and second line ends from each other in an error-free state of the line;

- connecting the first and second line ends in an error state of the line;

- feed a supply voltage into the first or second line end for supplying a user device connected to the network via a branching unit;

- feed a further supply voltage to the first line end if the supply voltage is fed to the second line end and is not detected at the first line end after lapse of a predetermined period of time by the redundancy manager; and

- feed the further supply voltage to the second line end if the supply voltage is fed to the first line end and is not detected at the second line end after lapse of the predetermined period of time by the redundancy manager;

- detecting an open or short circuit in a segment of the network line within a branching unit on an intermediate portion of the network line, and

- disconnecting the segment from the network line automatically by the branching unit.

36. (new) A network with redundancy properties, comprising:  
a plurality of electrical signal branching units linked sequentially via a plurality of trunk lines, wherein each trunk line is a portion of a communication line for data and power communication;

each branching unit comprising a first network connection to one of the trunk lines, a second network connection to an other of the trunk lines, and a trunk-terminating resistor that controllably terminates the communication line;

the communication line comprising first and second ends connected to respective first and second ports of a redundancy manager;

first and second line-terminating resistors in the redundancy manager that controllably terminate the respective first or second ends of the communication line;

a third port on the redundancy manager connected to a data/power bus system;

wherein the redundancy manager connects the third port to the first port, connects the second line-terminating resistor to terminate the second end of the communication line, then monitors a voltage received from the second end of the communication line for a threshold value indicating acceptable transmission of power through the communication line, and if the monitored voltage falls below a threshold value, the redundancy manager electrically connects the first and second ports together, and disconnects the second line-terminating resistor;

wherein each branching unit monitors electrical current or voltage on said one or the other of the connected trunk lines, implements a state transition table to detect a short or open circuit in a failed said one or the other trunk line, and upon detecting the short or open circuit disconnects the failed trunk line, and connects the trunk-terminating resistor to terminate the communication line; and

wherein if a given trunk line develops a short or open circuit, a branching unit connected thereto disconnects the given trunk line from the communication line, and the redundancy manager restores data/power to all of the branching units by connecting the first and second ports together, thereby communicating data and power on the communication line in two directions from the redundancy manager to reach all of the branching units.